

Claims 17-34 have been cancelled without prejudice. Applicants hereby affirm election of Claims 1-16 for prosecution. Thus, Claims 1-16 are now under examination in this application.

The Examiner has rejected Claims 1-16 under the second paragraph of 35 U.S.C. §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Specifically, the Examiner alleges that “it is unclear what is meant by ‘non-uniformly distributed’” as used in line 3 of Claim 1.

Applicants submit that the claimed expression “non-uniformly distributed” is fully definite as to allow one skilled in the art to understand what is claimed. It is a well established rule that “whether a claim is invalid for indefiniteness requires a determination whether those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Morton International Inc. v. Cardinal Chemical Co.*, 28 USPQ2d 1190, 1194-95 (CAFC 1993). The specification at page 2, lines 23-28 clearly sets forth a diffusion barrier layer that can be formed from, for example, “silicon, carbon, nitrogen and hydrogen with the nitrogen being more concentrated near the lower and upper surfaces of the diffusion barrier layer, i.e., non-uniformly distributed.” Additionally, the specification at page 2, line 28 through page 3, line 1 further sets forth that the diffusion barrier layer can be comprised of silicon, carbon, and hydrogen in the central portion of the layer and silicon, carbon, nitrogen and hydrogen in the upper and lower portions of the layer. As such, one skilled in the art would readily understand the claimed expression “non-uniformly distributed” when analyzing the contents of the

specification. Thus, the claimed expression "non-uniformly distributed" is believed to be fully clear and definite as to comply with the requirements of the second paragraph of 35 U.S.C. §112.

The Examiner has rejected Claims 1-16 under 35 U.S.C. §103(a) as being obvious over Grill et al. U.S. Patent No. 6,147,009 ("Grill").

Nowhere does Grill disclose or suggest a diffusion barrier layer comprising "silicon, carbon, nitrogen and hydrogen, with nitrogen being non-uniformly distributed throughout the diffusion barrier layer" as presently recited in Claims 1 and 7.

Rather, Grill discloses an electronic device built from a silicon substrate containing a first dielectric cap layer, e.g., silicon nitride, a hydrogenated oxidized silicon carbon layer, e.g., SiCOH, and a second dielectric cap layer, e.g., silicon nitride. At no point is there even a remote suggestion in Grill of a *single layer* of silicon, carbon, nitrogen and hydrogen and where the nitrogen is non-uniformly distributed throughout that layer. Thus, nothing in Grill would lead one skilled in the art to modify the three layers built on a substrate disclosed therein to arrive at the presently claimed layer of silicon, carbon, nitrogen and hydrogen with nitrogen being non-uniformly distributed throughout the layer.

The Examiner alleges that Figure 9 of Grill discloses a diffusion barrier layer for a semiconductor device having an upper surface 82, a lower surface 62 and a central portion 84 and comprising silicon, carbon, and hydrogen (col. 5, lines 5-11) and that Grill does not disclose nitrogen being non-uniformly distributed throughout the diffusion barrier layer. The Examiner then alleges that Grill further discloses a cap layer (surface layer) that can be suitably formed of

silicon nitride, silicon carbo-oxide, and their hydrogenated compounds (col. 8, lines 17-22). Since this layer is formed by a mixture of silicon related materials with nitrogen concentrated in the cap layers 82 and 62 of Figure 9, the Examiner alleges it is obvious that nitrogen is non-uniformly distributed throughout the entire layer 44.

However, nowhere does Figure 9 or the discussion thereof in Grill (see column 7, line 40 through column 8, line 58) disclose or suggest the presently claimed layer comprising silicon, carbon, nitrogen and hydrogen with the nitrogen being non-uniformly distributed throughout. Rather, Figure 9 of Grill discloses (1) a layer 62 of, for example, silicon nitride; (2) a layer 84 of silicon, carbon, oxygen and hydrogen; (3) a layer 82 of, for example, silicon nitride, and (4) a layer 86 of silicon, carbon, oxygen and hydrogen. This certainly does not disclose a layer comprising silicon, carbon, nitrogen and hydrogen with the nitrogen being non-uniformly distributed throughout. If it is the Examiner's position that Grill teaches or suggests that a single layer of silicon, carbon, nitrogen and hydrogen and where the nitrogen is non-uniformly distributed throughout that layer, the Examiner is respectfully requested to identify with particularity (by column and line) where *in Grill* such teaching or suggestion can be found.

Accordingly, Claims 1-16 are believed to be nonobvious, and therefore patentable, over Grill.

For the foregoing reasons, Claims 1-16 as presented herein are believed to be in condition for immediate allowance. Such action is earnestly solicited.

Respectfully submitted,



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